

## ABSTRACT OF THE INVENTION

A modified Ti-Mn<sub>2</sub> hydrogen storage alloy. The alloy generally is comprised of Ti and Mn. A generic formula for the alloy is: Ti<sub>Q-X</sub>Zr<sub>X</sub>Mn<sub>Z-Y</sub>A<sub>Y</sub>, where A is generally one or more of V, Cr, Fe, Ni and Al. Most preferably A is one or more of V, Cr, and Fe. The subscript Q is preferably between 0.9 and 1.1, and most preferably Q is 1.0. The subscript X is between 0.0 and 0.35, more preferably X is between 0.1 and 0.2, and most preferably X is between 0.1 and 0.15. The subscript Y is preferably between 0.3 and 1.8, more preferably Y is between 0.6 and 1.2, and most preferably Y is between 0.6 and 1.0. The subscript Z is preferably between 1.8 and 2.1, and most preferably Z is between 1.8 and 2.0. The alloys are generally single phase materials, exhibiting a hexagonal C<sub>14</sub> Laves phase crystalline structure.